CLINICAL OUTCOME AFTER UNICONDYLAR AND TOTAL KNEE ARTHROPLASTY

Claeys K[1], Van Damme G[2], De Vroey H[1], Vereecke E[3], Staes F[4]

1. KU Leuven - Campus Bruges, Department Rehabilitation Sciences, Bruges, Belgium.
2. AZ Sint-Lucas, Department Orthopedics, Bruges, Belgium.
3. KU Leuven - Campus Kulak Kortrijk, Department Development and Regeneration, Kortrijk, Belgium.
4. KU Leuven - Campus Leuven, Department Rehabilitation Sciences, Leuven, Belgium

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1. Background

- Increasing frequency of knee arthroplasty procedures
- Besides total knee arthroplasty (TKA), unicondylar knee arthroplasty (UKA) becomes more popular
- Clinical and biomechanical outcome in patients with TKA compared to patients with UKA remains unclear

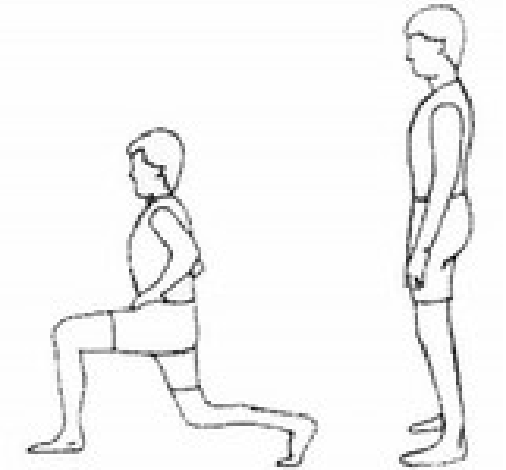
Unicompartmental knee replacement

Total knee replacement

www.printerest.com

2. Aims

1. To document clinical outcome in patients with UKA and TKA one year postop compared to age-matched controls
2. To evaluate the performance of the forward lunge in patients with UKA and TKA one year postop compared to age-matched controls



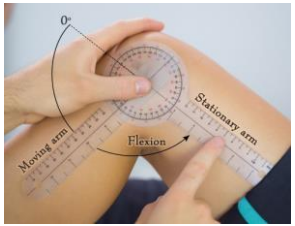
https://ptontrack.files.wordpress.com

3. Methods

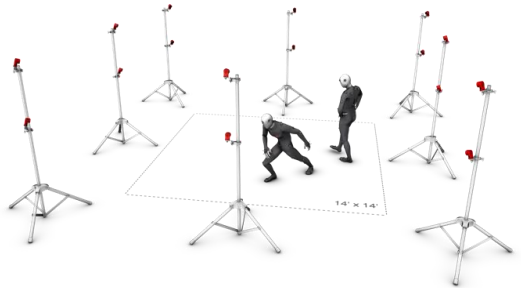
1. **KOOS**: evaluation of pain and functionality

2. **Hand held dynamometer**: evaluation of peak force of limb muscles

3. **Standard goniometer**: evaluation of range of motion



4. **Optitrack motion capture system**: evaluation of kinematics



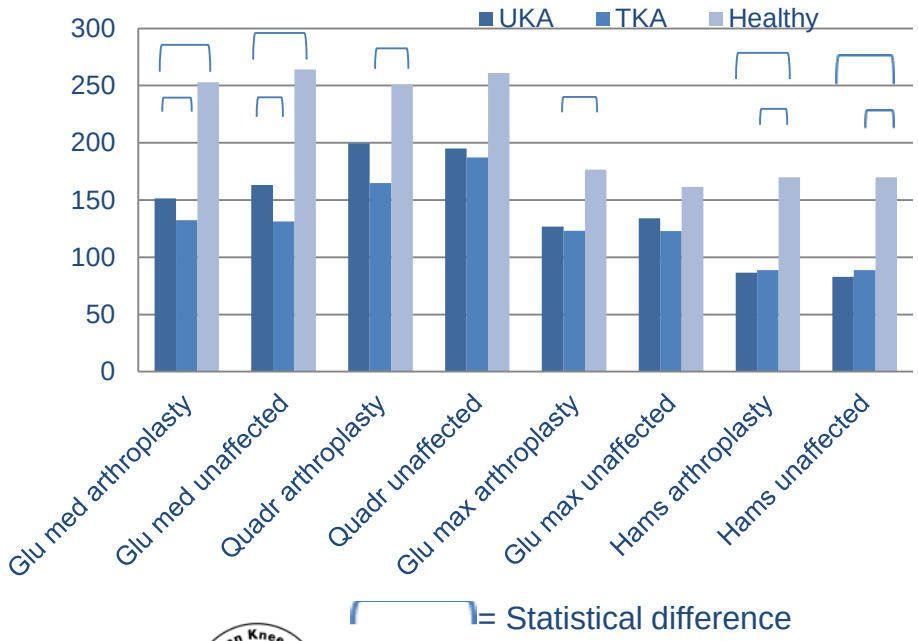
4. Results

4.1. Patient characteristics + KOOS

	Patients with UKA Mean (SD)	Patients with TKA Mean (SD)	Healthy controls Mean (SD)	P-value (Anova)
Number (M/F)	7 (5/2)	9 (2/7)	9 (7/2)	0.04
Age	64 yr 1 mth(11yr 1 mth)	65 yr 4 mth (4 yr 1 mth)	63 yr 9 mth (3 yr 9 mth)	0.90
Age UKA or TKA	448 (83) mth	456 (92) mth	-	0.86
Weigth	91.39 (21.52) kg	88.68 (16.63) kg	76.72 (16.70) kg	0.23
Body length	1.70 (0.13) m	1.66 (0.08) m	1.68 (0.09) m	0.71
BMI	31.20 (4.92)	32.31 (7.00)	26.81 (3.57)	0.10
VAS General health	63.57 (30.23)	82.22 (9.71)	74.33 (29.73)	0.34
KOOS Pain	89.7 (13.9)	83.0 (25.4)	96.3 (7.9)	0.25
KOOS Symptoms	89.3 (10.1)	88.9 (9.2)	93.3 (17.7)	0.75
KOOS ADL	88.9 (13.3)	84.0 (19.2)	97.2 (6.3)	0.15
KOOS Sport	67.9 (28.7)	66.1 (31.2)	90.0 (22.9)	0.16
KOOS quality of life	75.0 (17.3)	82.6 (12.0)	96.5 (8.3)	0.01

4. Results

4.2. Muscle strength (Newton)

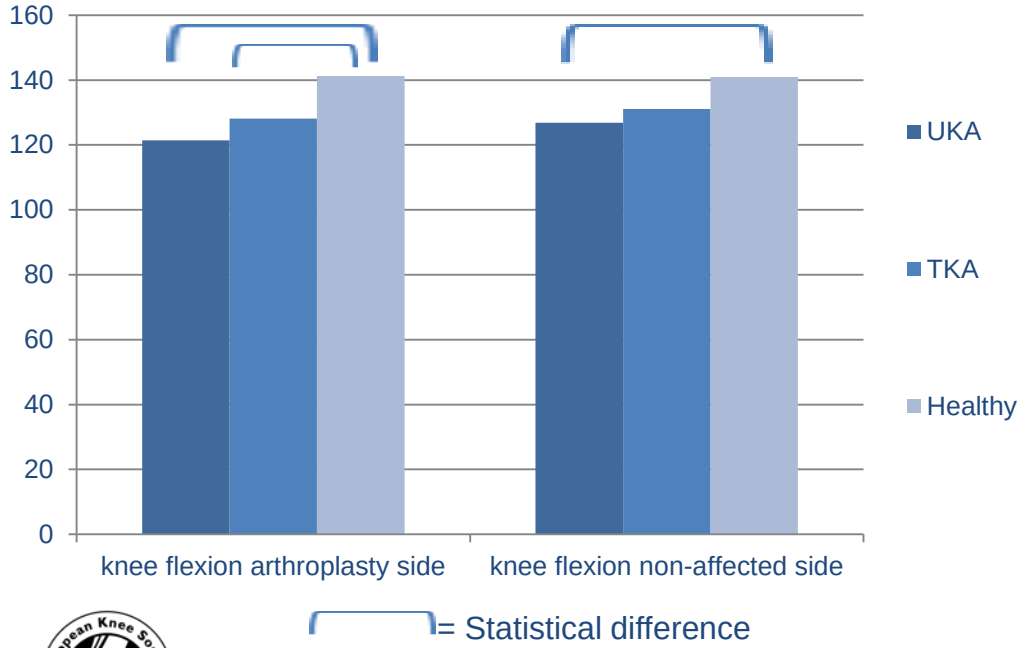


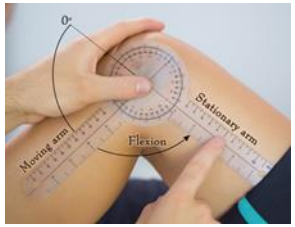
	Patients with UKA Mean (SD)	Patients with TKA Mean (SD)	Healthy controls Mean (SD)	P-value (Anova)
H/Q ratio operated side	0.58 (0.30)	0.54 (0.13)	0.72 (0.23)	0.23
H/Q ratio healthy side	0.53 (0.16)	0.51 (0.16)	0.73 (0.25)	0.63

- Differences most visible in hip extensors, hip abductors and hamstrings
- Hamstring/Quadriceps ratio's not statistical different between groups
- However: much higher H/Q ratio's in the healthy group

4. Results

4.3. Range of motion (degrees)

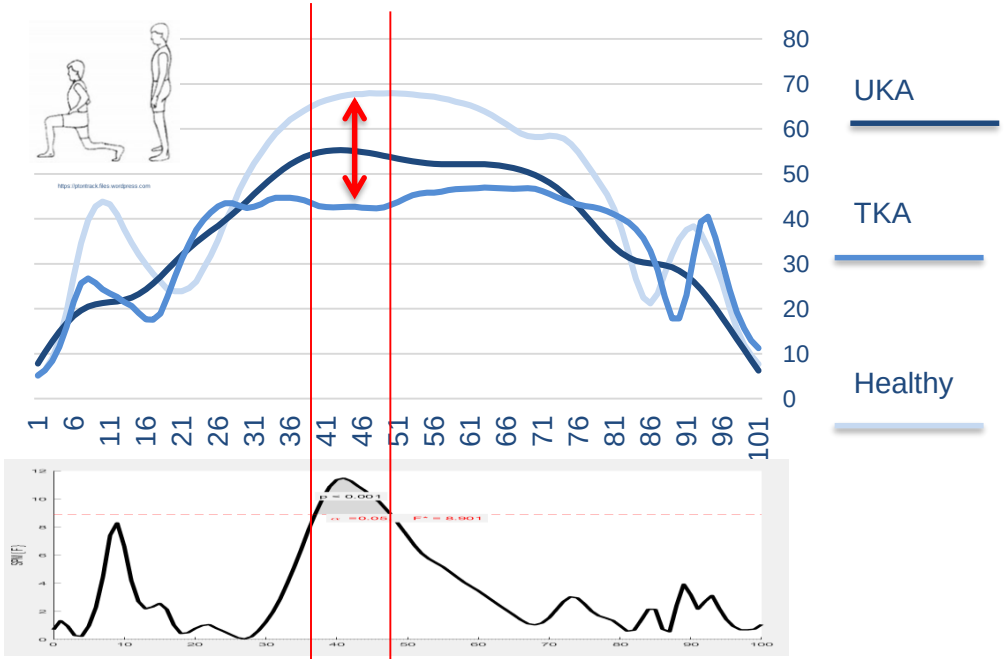




- Decreased knee flexion in the UKA group, also at the non-operated side

4. Results

4.4. Performance of the lunge: sagittal knee flexion angle (degrees)

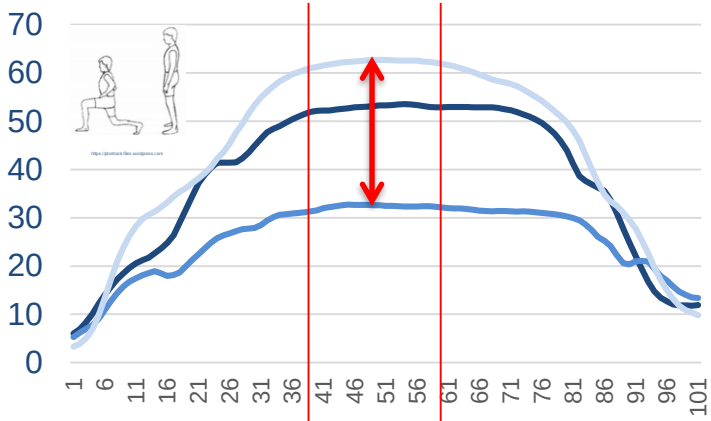


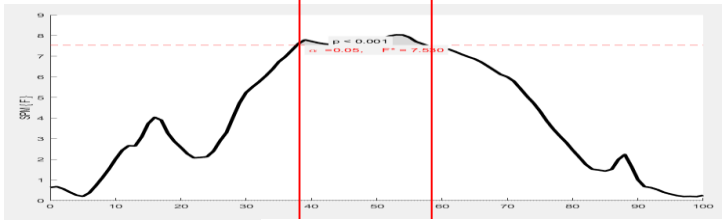
- Decreased peak knee flexion in TKA group compared to the healthy group
- Difference demonstrated in phase with most loading on the knee (38 % - 59 %)
- No significant differences between UKA and Healthy persons

Statistical Parametric Mapping Anova

4. Results

4.4. Performance of the lunge: sagittal hip flexion angle





UKA

TKA

Healthy

- Decreased peak hip flexion in TKA group compared to the healthy group
- Difference demonstrated in phase with most loading on the knee (38 % – 59 %)
- No significant differences between UKA and Healthy

Statistical Parametric Mapping Anova

5. Conclusion

- ROM unloaded: TKA > UKA
- Peak knee and hip flexion during forward lunge: UKA > TKA
- Decreased muscle strength for people with TKA and UKA compared to healthy controls both at the operated side and the non-operatied side for:
  - Hamstrings
  - Gluteus medius
  - Gluteus maximus
- More optimal performance of the forward lunge in people with UKA possibly caused by retention of cruciate ligaments?